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April 2, 2021

Ministry of the Environment, Conservation and Parks  
Technical Assessment and Standards Development Branch  
40 St. Clair Avenue West, 7<sup>th</sup> Floor  
Toronto, Ontario  
M4V 1M2

Attn: Mr. Paul Welsh

**Reference: Environmental Registry of Ontario Posting No. 019-2557 (Technical Guidance for Soil Vapour Intrusion Assessment)**

Dear Mr. Welsh,

The Canadian Brownfields Network (CBN) appreciates the opportunity to participate in the Ministry of the Environment, Conservation and Parks (MECP) invitation to comment with respect to the proposed guidance document (*Draft Technical Guidance for Soil Vapour Intrusion Assessment*). CBN's Technical Advisory Committee (TAC) has solicited and compiled comments from interested members for the purpose of making this submission on behalf of CBN. CBN has a diverse membership of site owners, developers, consultants, and industry association representatives who are active in the area of brownfield development within Ontario and across Canada.

CBN is committed to supporting the redevelopment and reuse of brownfield properties through advocacy for regulations and policies that are founded on sound science and appropriate risk, are harmonized across jurisdictions, and provide clarity and certainty with respect to brownfield redevelopment.

The proposed MECP (*Draft Technical Guidance For Soil Vapour Intrusion Assessment*) is a positive development to provide guidance on the vapour intrusion assessment process, preparing a conceptual site model for vapour intrusion risk, conducting soil vapour intrusion and indoor air quality testing. The guidance will assist in standardizing current professional practices on soil vapour intrusion assessments, ensuring a consistent approach within the industry in characterizing potential contamination in soil vapour.

CBN strongly supports the implementation of the Guidance but suggests that the MECP to consider further changes that would improve the clarity and improve the understanding of best practices for addressing vapour intrusion risk and conducting assessments within the Guidance document. The specific issues and suggestions for improvement are included in the attached Table.

We would be pleased to discuss these comments further with the MECP. In closing, we thank you for the opportunity to provide comments and input on the Guidance.

Kindest Regards,

A handwritten signature in black ink, appearing to read 'Peter Sutton', with a long horizontal flourish extending to the right.

Peter Sutton  
Co-Chair, Technical Advisory Committee  
Canadian Brownfields Network

A handwritten signature in black ink, appearing to read 'Chris De Sousa', written in a cursive style.

Chris De Sousa  
President  
Canadian Brownfields Network

**Table 1: Specific Proposed Issues and Suggestions for Improvement**

<b>Section</b>	<b>Issue Type</b>	<b>Issue Description</b>	<b>Comment</b>
LIST OF ABBREVIATIONS AND ACRONYMS	Amendment	COPC “Chemical of potential concern”	Change to “Contaminant of potential concern”, global change within document
LIST OF ABBREVIATIONS AND ACRONYMS	Amendment	PCE “Perchloroethylene”	Add “also referred to as tetrachloroethylene and tetrachloroethane”
General	Amendment	Vapor /Vapour multiple use through the body of the text in the documents	Only use Vapor for US document references, within the body of the text it should be consistent i.e., vapour
General	-	Comment	The inclusion of vertical screening distances for PHCs in the updated guidance is appreciated and aligns with recent guidance documents from other jurisdictions.
2.2	Amendment	Although this guidance is structured to reflect a sequential phased approach, starting with screening of sites through the use of subsurface data, it does not preclude either an iterative (i.e., non-sequential) approach or a top-down approach	Based on the inherent challenges with collecting indoor air quality results due to false positives caused ambient sources commonly used within buildings. We recommend that the sentence is edited to state that the preferred approach is a sequential phase approach rather than iterative or top-down approach, although either approach can be used.
3.0 / 4.0	Amendment	Missing discussion on conceptual site model and assessment of sewer vapour intrusion	We suggest the discussion of the conceptual site model for vapour intrusion in Chapter 3 be expanded to include sewer vapour intrusion which is increasingly recognized as a key pathway particularly when sewers intersect groundwater plumes, sewer discharges contain contaminants, and when sewers intersect vadose zone sources. Similarly, we suggest thee vapour intrusion assessment processes in Chapter 4 be expanded to include approaches for sampling sewer gas from manholes and estimation of attenuation factors for sewer vapour intrusion.

Section	Issue Type	Issue Description	Comment
4.2.4	Amendment	“Therefore, consideration of the inclusion distances may not be always appropriate for screening purposes, <u>unless the inclusion distances are maintained as part of RMMs.</u> ”	The acceptance of such an approach to RMM has not generally been observed in practice to date, namely because the PSS recommended in an RA apply to the entire property and, thus, it is assumed that all COCs extend beneath all building footprints at concentrations equal to the PSS. Ideally, this is the approach the MECP intends to take going forward. However, if not, removal of this suggestion would avoid confusion.
4.4.2	Amendment	Petroleum Vapour Intrusion, Inclusion distance discussed in previous Section and repetitive.	Inclusion distance is discussed in great detail in Section 4.2.4, revisited in Section 4.4.2, and again (for PHCs) in Appendix. Section 4.4.2 could likely be removed as it doesn’t add value and seems out of place.
4.6	Amendment	Additional VI mitigation reference	Suggest adding reference to the ITRC 2020 guidance document on vapour intrusion mitigation: ITRC (Interstate Technology & Regulatory Council). 2020. Vapor Intrusion Training Team Materials. Washington, D.C.: Interstate Technology & Regulatory Council, VIM Team. <a href="https://vim-1.itrcweb.org/">https://vim-1.itrcweb.org/</a>
5.3.2	Amendment	Considerations for Soil Vapour Sampling Locations, there is no discussion here on how to sample  + when there are no buildings present and the water table is shallow	Suggest adding discussion on the benefits of utilizing vapour barrier liners on the ground surface to replicate a building footprint around a vapour sampling probe. This method has been previously described in BC guidance and is a useful method of determining vapour intrusion risk when the water levels are shallower than 1.68 metres below ground surface to prevent drawing down of atmospheric air.
5.3.4	Amendment	Request for further guidance / example on identification of worst-case conditions	This discussion of key factors affecting the variability in soil vapour quality is good given the magnitude of the potential variability and importance of assessing worst-case conditions. Some further guidance and an example on the identification of worst-case conditions for soil vapour sampling would be helpful (e.g., inclusion of a table similar to Table 4 in the BC CSAP 2020 document “Guidance on the Assessment of the Soil Vapour to Air Pathway”).

Section	Issue Type	Issue Description	Comment
5.3.4	Amendment	When to Sample and Sampling Frequency, Ground Water Condition. No discussion on the capillary fringe	Suggest adding further discussion of how the capillary fringe above the water table and its potential to impact soil vapour sampling
5.3.4	Amendment	2 <sup>nd</sup> last bullet may be overly conservative	If soil vapour concentrations collected during a worst-case condition are 100x lower than the SVSLs, this may be sufficient to assess the pathway.
6.0	Amendment	Request for further guidance on use of indicators, surrogates, and tracers in VI assessments	We suggest including a recommendation for monitoring the pressure difference between the indoor air and sub-slab during indoor air sampling events. Recent research into indicators, surrogates, and tracers for VI has identified pressure difference as a cost-effective and simple method to potentially explain significant differences in measured indoor air concentrations and help assess whether samples were obtained under near worst-case conditions. Further guidance on available tools and methods for the use of indicators, surrogates, and tracers is also recommended to be included in the document.
6.2.2	Amendment	Building Foundation Construction, This section seems out of place under the heading of Indoor Air Quality Testing	Since a lot of the material has already been touched on and applies to soil vapour testing as well (e.g., discussion about oxygen depletion beneath the building and predicting biodegradation in soil vapour). An early section on overall factors affecting VI, perhaps under "Conceptual Site Model" might be more useful/ less repetitive.
6.2.3	Clarity	Building Ventilation, discussion on building ventilation would be beneficial earlier on in the guidance	Some of this discussion on ventilation would be beneficial earlier on in the context of modeling VI using soil/GW data and/or soil vapour data, particularly since the ACH is a critical input to J&E modeling. It would make more sense to put this all in Section 4.4.1.4, (which currently refers to Section 6.2.3), or even Section 3.3.4, and Section 6.2.3 can refer back to it.

Section	Issue Type	Issue Description	Comment
6.2.4	Clarity	Building Pressure and Weather Condition. Discussion of climatic/weather conditions seems out of place in this section	While it is helpful to know how climatic/ weather conditions affect the data, this section appears geared towards what to consider “when assessing potential for vapour intrusion or designing a vapour mitigation system” which seems out of place so far down in the guidance, in a chapter on indoor air testing. This is a concept that affects soil vapour assessment as well and was covered in detail in S. 5.3.4. An early section on overall factors affecting VI might be more useful/ less repetitive.
6.3.7	Amendment / Clarity	Unnecessary cross-reference to other MECP document and request for further guidance on larger buildings	This section references the MGRA user guide for recommendations on the minimum number of indoor air samples as a function of the building footprint. Inclusion of this table directly in the guidance document would be helpful along with additional specific recommendations for the minimum number of indoor air samples in larger buildings.
6.3.9	Clarity	1 <sup>st</sup> bullet is missing indoor air specific factors	Other major changes in conditions that could affect indoor air concentrations should be acknowledged here (e.g., building occupancy, HVAC operational changes).
Section I-5	Clarity	Alternative Screening Assessment: Vertical Inclusion Distance Lack of discussion of determining water table fluctuation and extent of the smear zone	Some guidance as to frequency or duration of water table monitoring to establish “seasonal variations in water level” would be helpful.
Table V.1	Clarity	Example of Common Background Indoor Air Sources in Residences, sources for PCE and Chloroform to be expanded	PCE is found in commercially sold glues; suggest adding it to the list of sources. Chloroform is still used as a spot remover for dry cleaning.